

Sequence Listing  
SEQUENCE LISTING

<110> THE GOVERNMENT OF THE UNITED STATES OF AMERICA AS  
REPRESENTED BY THE SECRETARY OF THE DEPARTMENT OF HEALTH AND  
HUMAN SERVICES  
Tsai, Robert Y.L.  
McKay, Ronald D.G.

<120> METHODS FOR CONTROLLING PROLIFERATION OF CELLS

<130> 4239-66642

<150> PCT/US03/31321

<151> 2003-10-01

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<151> 2003-01-22

<150> 60/415,867

<151> 2002-10-02

<160> 14

<170> PatentIn version 3.2

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<212> DNA

<213> Rattus rattus

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# Sequence Listing

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Lys Arg Tyr Lys Ile Gln Lys Lys Val Arg Glu His His Arg Lys Leu  
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Arg Lys Glu Ala Lys Lys Arg Gly His Lys Lys Pro Lys Lys Asp Pro  
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Gly Val Pro Asn Ser Ala Pro Phe Lys Glu Ala Leu Leu Arg Glu Ala  
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Glu Leu Arg Lys Gln Gln Leu Glu Glu Leu Lys Gln Gln Gln Lys Leu  
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# Sequence Listing

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 Val Leu Asp Ala Arg Asp Pro Leu Gly Cys Arg Cys Pro Gln Val Glu  
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 Ala Ser Ile Glu Val Leu Arg Pro Leu Glu Ala Ala Ser Ala Ile Leu  
 325 330 335

# Sequence Listing

Ser Gln Ala Asp Ser Gln Gln Val Val Leu Lys Tyr Thr Val Pro Gly  
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385 390 395 400

Pro Ala Ser Trp Asn His Ser Pro His Phe Asn Glu Asn Ile Thr Ala  
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Ile Met Lys Arg Gly Phe Asn Leu Glu Glu Leu Glu Lys Asn Asn Ala  
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His Ser Ile Gln Val Leu Lys Gly Pro His Leu Thr Asn Lys Ile Leu  
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# Sequence Listing

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<212> PRT
<213> Mus musculus

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Arg Lys Glu Ala Lys Lys Arg Gly His Lys Lys Pro Arg Lys Asp Pro  
35 40 45

Gly Val Pro Asn Ser Ala Pro Phe Lys Glu Ala Leu Leu Arg Glu Ala  
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Glu Leu Arg Lys Gln Gln Leu Glu Glu Leu Lys Gln Gln Gln Lys Leu  
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Asp Arg Gln Lys Glu Gln Glu Arg Lys Arg Lys Leu Glu Val Ser Pro  
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Gly Asp Glu Gln Ser Asn Val Glu Thr Arg Glu Glu Ser Asp Glu Pro  
100 105 110

Lys Arg Lys Lys Ala Lys Ala Gly Lys Gln Asn Pro Lys Lys Leu His  
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Val Leu Asp Ala Arg Asp Pro Leu Gly Cys Arg Cys Pro Gln Ile Glu  
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Glu Ala Val Ile Gln Ser Gly Ser Lys Lys Leu Ile Leu Val Leu Asn  
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Lys Ser Asp Leu Val Pro Lys Glu Asn Leu Glu Asn Trp Leu Asn Tyr  
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Leu Asn Lys Glu Leu Pro Thr Val Val Phe Lys Ala Ser Thr Asn Leu  
195 200 205

Lys Asn Arg Lys Thr Phe Lys Ile Lys Lys Lys Val Val Pro Phe  
210 215 220

Gln Ser Lys Ile Cys Cys Gly Lys Glu Ala Leu Trp Lys Leu Leu Gly  
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Asp Phe Gln Gln Ser Cys Gly Lys Asp Ile Gln Val Gly Val Ile Gly  
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Sequence Listing															
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His	Ser	Ile	Gln	Val	Leu	Lys	Gly	Pro	His	Leu	Thr	Asn	Arg	Ile	Leu
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Phe	Arg	Ser	Ser	Gly	Leu	Thr	Asn	Gly	Ile	Leu	Asp	Glu	Lys	Asp	Ile
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Val	Glu	Glu	Ser	Pro	Ser	Gln	Thr	Glu	Asp	Gln	Gln	Asp	Ala	Asp	Asp
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# Sequence Listing

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35 40 45

Gly Val Pro Asn Ser Ala Pro Phe Lys Glu Ala Leu Leu Arg Glu Ala  
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Glu Leu Arg Lys Gln Arg Leu Glu Glu Leu Lys Gln Gln Gln Lys Leu  
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Asp Arg Gln Lys Glu Leu Glu Lys Lys Arg Lys Leu Glu Thr Asn Pro  
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Asp Ile Lys Pro Ser Asn Val Glu Pro Met Glu Lys Glu Phe Gly Leu  
100 105 110

Cys Lys Thr Glu Asn Lys Ala Lys Ser Gly Lys Gln Asn Ser Lys Lys  
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# Sequence Listing

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 165 170 175  
 Leu Asn Lys Ser Asp Leu Val Pro Lys Glu Asn Leu Glu Ser Trp Leu  
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 Lys Pro Lys Asp Lys Gly Lys Ile Thr Lys Arg Val Lys Ala Lys Lys  
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 Tyr Thr Val Pro Gly Tyr Arg Asn Ser Leu Glu Phe Phe Thr Met Leu  
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# Sequence Listing

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370 375 380

Gly Ala Ala Lys Leu Leu Trp Ser Glu Trp Thr Gly Ala Ser Leu Ala  
385 390 395 400

Tyr Tyr Cys His Pro Pro Thr Ser Trp Thr Pro Pro Pro Tyr Phe Asn  
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Glu Ser Ile Val Val Asp Met Lys Ser Gly Phe Asn Leu Glu Glu Leu  
420 425 430

Glu Lys Asn Asn Ala Gln Ser Ile Arg Ala Ile Lys Gly Pro His Leu  
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Ala Asn Ser Ile Leu Phe Gln Ser Ser Gly Leu Thr Asn Gly Ile Ile  
450 455 460

Glu Glu Lys Asp Ile His Glu Glu Leu Pro Lys Arg Lys Glu Arg Lys  
465 470 475 480

Gln Glu Glu Arg Glu Asp Asp Lys Asp Ser Asp Gln Glu Thr Val Asp  
485 490 495

Glu Glu Val Asp Glu Asn Ser Ser Gly Met Phe Ala Ala Glu Glu Thr  
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Gly Glu Ala Leu Ser Glu Glu Thr Thr Ala Gly Glu Gln Ser Thr Arg  
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Glu Leu Arg Lys Gln Xaa Leu Glu Glu Leu Lys Gln Gln Gln Lys Leu  
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Asp Arg Gln Lys Glu Xaa Glu Xaa Lys Arg Lys Leu Glu Xaa Xaa Pro  
85 90 95

Xaa Xaa Xaa Xaa Ser Asn Val Glu Xaa Xaa Glu Xaa Xaa Xaa Xaa Xaa  
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Page 19

Sequence Listing																																			
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# Sequence Listing

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Cys Lys Lys Pro Ala Arg Gln Asn Gly Lys Lys Val Thr Ser Arg Pro  
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Ser Ser Ala Pro Gln Ile Val His Gly Asn Asp His Ala Ser Arg Glu  
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Ala Glu Leu Lys Lys Lys Arg Val Glu Glu Met Arg Glu Lys Gln Gln  
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Val Ala Arg Glu Gln Glu Arg Gln Arg His Arg Thr Met Glu Ser Tyr  
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Cys Gln Asp Val Leu Lys Arg Gln Gln Glu Phe Glu Gln Lys Glu Glu  
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Page 21

Sequence Listing															
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# Sequence Listing

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100 105 110

Arg Lys Ala Tyr Tyr Lys Glu Phe Arg Lys Val Val Glu Tyr Ser Asp  
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Val Ile Leu Glu Val Leu Asp Ala Arg Asp Pro Leu Gly Cys Arg Cys  
130 135 140

Phe Gln Met Glu Glu Thr Val Leu Arg Ala Glu Gly Asn Lys Lys Leu  
145 150 155 160

Val Leu Val Leu Asn Lys Ile Asp Leu Val Pro Lys Glu Ile Val Glu  
165 170 175

Lys Trp Leu Glu Tyr Leu Leu Asn Glu Leu Pro Thr Val Ala Phe Lys  
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Ala Ser Thr Gln His His Gln Val Lys Asn Leu Thr Arg Cys Lys Val  
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Pro Val Asp Gln Ala Ser Glu Ser Leu Leu Lys Ser Arg Ala Cys Phe  
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# Sequence Listing

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        275                280                285

    Asp Lys Phe Ile Arg Leu Leu Asp Ala Pro Gly Ile Val Pro Gly Pro
        290                295                300

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    Leu Ala Asp Pro Val Thr Pro Val Glu Thr Ile Leu Gln Arg Cys Asn
        325                330                335

    Leu Glu Glu Ile Ser Ser Tyr Tyr Gly Val Ser Gly Phe Gln Thr Thr
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    Glu His Phe Leu Thr Ala Val Ala His Arg Leu Gly Lys Lys Lys Lys
        355                360                365

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        370                375                380

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    385                390                395                400

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        405                410                415

    Val Phe Asp Ile Glu Asp Thr Glu His Ala Asn Glu Asp Thr Met Glu
        420                425                430

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    Asp Ala Ile Glu Asn Arg Ser Thr Val Tyr Lys Ile Gly Asn Leu Thr
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# Sequence Listing

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Met Val  
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35 40 45 50

aac agt cgt ggt aaa gtg att aag cca ctg cag tat cag tca act gtg 308  
Asn Ser Arg Gly Lys Val Ile Lys Pro Leu Gln Tyr Gln Ser Thr Val  
55 60 65

gct tct ggc aca gtg gcc cga gtg gag ccg aat att aaa tgg ttt gga 356

Sequence Listing															
Ala	Ser	Gly	Thr	Val	Ala	Arg	Val	Glu	Pro	Asn	Ile	Lys	Trp	Phe	Gly
			70					75					80		
aat	act	cgt	gtg	atc	aag	cag	gca	tca	tta	caa	aaa	ttt	caa	gag	gaa
Asn	Thr	Arg	Val	Ile	Lys	Gln	Ala	Ser	Leu	Gln	Lys	Phe	Gln	Glu	Glu
		85					90					95			
atg	gat	aaa	gtt	atg	aag	gat	cca	tac	aaa	gtt	gtc	atg	aaa	caa	agc
Met	Asp	Lys	Val	Met	Lys	Asp	Pro	Tyr	Lys	Val	Val	Met	Lys	Gln	Ser
	100					105					110				
aaa	tta	ccg	atg	tct	ctt	ctg	cac	gat	cga	atc	cag	cct	cat	aac	gca
Lys	Leu	Pro	Met	Ser	Leu	Leu	His	Asp	Arg	Ile	Gln	Pro	His	Asn	Ala
115					120					125					130
aaa	gtc	cac	att	ctt	gat	act	gaa	agc	ttt	gaa	agt	aca	ttt	ggc	cca
Lys	Val	His	Ile	Leu	Asp	Thr	Glu	Ser	Phe	Glu	Ser	Thr	Phe	Gly	Pro
			135						140					145	
aag	tca	cag	aga	aag	cgg	cca	aac	ttg	ttt	gca	agt	gat	atg	caa	tcc
Lys	Ser	Gln	Arg	Lys	Arg	Pro	Asn	Leu	Phe	Ala	Ser	Asp	Met	Gln	Ser
			150					155					160		
ctt	cta	gaa	aac	gct	gaa	atg	tct	act	gag	agc	tat	gac	cag	ggc	aag
Leu	Leu	Glu	Asn	Ala	Glu	Met	Ser	Thr	Glu	Ser	Tyr	Asp	Gln	Gly	Lys
		165					170					175			
gac	cgt	gat	ttg	gtg	atg	gag	gac	act	ggg	gta	aga	aat	gaa	gct	caa
Asp	Arg	Asp	Leu	Val	Met	Glu	Asp	Thr	Gly	Val	Arg	Asn	Glu	Ala	Gln
	180					185					190				
gaa	gag	ata	tat	aaa	aaa	ggg	cag	tca	aaa	aga	ata	tgg	gga	gaa	ctc
Glu	Glu	Ile	Tyr	Lys	Lys	Gly	Gln	Ser	Lys	Arg	Ile	Trp	Gly	Glu	Leu
195					200					205					210
tac	aag	gtg	ata	gac	tca	tca	gat	gtt	gtc	gtt	caa	gtc	ctt	gac	gct
Tyr	Lys	Val	Ile	Asp	Ser	Ser	Asp	Val	Val	Val	Gln	Val	Leu	Asp	Ala
				215				220					225		
aga	gat	ccg	atg	ggc	act	cgt	tcc	ccc	cac	atc	gaa	gct	tac	ttg	aaa
Arg	Asp	Pro	Met	Gly	Thr	Arg	Ser	Pro	His	Ile	Glu	Ala	Tyr	Leu	Lys
			230					235					240		
aag	gaa	aaa	ccc	tgg	aaa	cat	ctc	att	ttt	gta	ctc	aat	aag	tgt	gac
Lys	Glu	Lys	Pro	Trp	Lys	His	Leu	Ile	Phe	Val	Leu	Asn	Lys	Cys	Asp
		245					250					255			
ctt	gtt	cca	act	tgg	gca	acc	aaa	cga	tgg	gtt	gct	gtg	ctc	tcc	cag
Leu	Val	Pro	Thr	Trp	Ala	Thr	Lys	Arg	Trp	Val	Ala	Val	Leu	Ser	Gln
	260				265						270				
gac	tac	cca	aca	ctg	gct	ttc	cat	gcg	agc	ctc	acc	aat	ccc	ttt	ggg
Asp	Tyr	Pro	Thr	Leu	Ala	Phe	His	Ala	Ser	Leu	Thr	Asn	Pro	Phe	Gly
275				280						285					290
aag	gga	gca	ttc	att	cag	ctt	ctg	cgg	cag	ttt	ggg	aag	ttg	cac	aca
Lys	Gly	Ala	Phe	Ile	Gln	Leu	Leu	Arg	Gln	Phe	Gly	Lys	Leu	His	Thr
			295					300					305		
gac	aag	aaa	caa	atc	agt	gtt	ggg	ttc	att	ggc	tat	cca	aat	gta	ggc
Asp	Lys	Lys	Gln	Ile	Ser	Val	Gly	Phe	Ile	Gly	Tyr	Pro	Asn	Val	Gly
			310					315					320		

# Sequence Listing

aag Lys	agc Ser	tct Ser 325	gtg Val	att Ile	aat Asn	aca Thr	tta Leu 330	cga Arg	tcc Ser	aag Lys	aaa Lys	gtt Val 335	tgc Cys	aac Asn	gtg Val	1124
gcc Ala	ccc Pro 340	att Ile	gct Ala	gga Gly	gaa Glu	aca Thr 345	aag Lys	gtc Val	tgg Trp	cag Gln	tat Tyr 350	att Ile	acc Thr	ttg Leu	atg Met	1172
cgt Arg 355	cgt Arg	ata Ile	ttc Phe	ctg Leu	att Ile 360	gac Asp	tgc Cys	cct Pro	ggt Gly	gtg Val 365	gtt Val	tac Tyr	cca Pro	tct Ser	gag Glu 370	1220
gac Asp	tca Ser	gag Glu	acc Thr	gac Asp 375	att Ile	gtg Val	ctc Leu	aaa Lys	gga Gly 380	gtg Val	gtt Val	caa Gln	gtt Val	gag Glu 385	aaa Lys	1268
att Ile	aaa Lys	gct Ala	cct Pro 390	caa Gln	gac Asp	cac His	att Ile	ggt Gly 395	gct Ala	gtc Val	ctt Leu	gaa Glu	cga Arg 400	gca Ala	aag Lys	1316
cca Pro	gag Glu	tat Tyr 405	atc Ile	agc Ser	aag Lys	acg Thr	tac Tyr 410	aag Lys	att Ile	gag Glu	tcc Ser	tgg Trp 415	gag Glu	aac Asn	gcg Ala	1364
gag Glu	gac Asp 420	ttt Phe	ctt Leu	gag Glu	aag Lys	cta Leu 425	gct Ala	ctc Leu	cgc Arg	act Thr	ggg Gly 430	aag Lys	tta Leu	ctg Leu	aag Lys	1412
ggt Gly 435	gga Gly	gag Glu	cct Pro	gac Asp	atg Met 440	ctg Leu	act Thr	gtg Val	agc Ser	aag Lys 445	atg Met	gtt Val	ctc Leu	aat Asn	gac Asp 450	1460
tgg Trp	cag Gln	aga Arg	ggc Gly 455	cga Arg	atc Ile	cct Pro	ttc Phe	ttt Phe	gtc Val 460	aag Lys	ccg Pro	ccc Pro	aat Asn	gca Ala 465	gag Glu	1508
cta Leu	ccg Pro	acc Thr	gat Asp 470	tcc Ser	cag Gln	ctt Leu	cca Pro	cca Pro 475	tcc Ser	tca Ser	cca Pro	ttg Leu	gaa Glu 480	gtt Val	ccc Pro	1556
aca Thr	gaa Glu	aca Thr 485	acc Thr	cag Gln	aac Asn	aac Asn	cca Pro 490	gaa Glu	gaa Glu	gag Glu	acc Thr	aca Thr 495	gaa Glu	aca Thr	gaa Glu	1604
gtt Val	gaa Glu 500	agg Arg	tca Ser	gac Asp	tct Ser	atc Ile 505	act Thr	gaa Glu	aag Lys	gag Glu	cca Pro 510	gaa Glu	gga Gly	gac Asp	tgt Cys	1652
tct Ser 515	cag Gln	gat Asp	aga Arg	aac Asn	tca Ser 520	gag Glu	atg Met	caa Gln	cag Gln	atc Ile 525	ctc Leu	gca Ala	cga Arg	gtt Val	cgc Arg 530	1700
cag Gln	aac Asn	ttt Phe	ggc Gly 535	aaa Lys	atc Ile	aac Asn	gtg Val	ggg Gly 540	cct Pro	cag Gln	ttt Phe	tct Ser	gcg Ala	gat Asp 545	gac Asp	1748
ctg Leu	gtg Val	cct Pro	gtg Val 550	gag Glu	atg Met	tca Ser	gac Asp	ttg Leu 555	gaa Glu	gat Asp	ctg Leu	gaa Glu	agc Ser 560	tct Ser	ggg Gly	1796
gaa Glu	gag Glu	gaa Glu 565	gaa Glu	cag Gln	gag Glu	cag Gln	gaa Glu 570	cag Gln	cca Pro	ggg Gly	gag Glu	gat Asp 575	gcc Ala	gag Glu	gaa Glu	1844

# Sequence Listing

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gag cgc tcc cca gac act cag gag gaa cca gtg gga aac gac acc aag      1892
Glu Arg Ser Pro Asp Thr Gln Glu Glu Pro Val Gly Asn Asp Thr Lys
580                               585                               590

gcc gtg ctc aga gcc ctg gat gag aag att gcc aag tac cag agg ttt      1940
Ala Val Leu Arg Ala Leu Asp Glu Lys Ile Ala Lys Tyr Gln Arg Phe
595                               600                               605                               610

cta aat aaa gct aaa gct aaa aag ttc tct gcc gtc aga ata tcc aag      1988
Leu Asn Lys Ala Lys Ala Lys Lys Phe Ser Ala Val Arg Ile Ser Lys
615                               620                               625

gac tta agt gaa aag gtt ttt gca aaa tac aaa gaa gag aag aaa aca      2036
Asp Leu Ser Glu Lys Val Phe Ala Lys Tyr Lys Glu Glu Lys Lys Thr
630                               635                               640

tct gca gaa gac agt gat gca gca ccc acc aaa aag gca agg aag tgg      2084
Ser Ala Glu Asp Ser Asp Ala Ala Pro Thr Lys Lys Ala Arg Lys Trp
645                               650                               655

gat gca cag atg gaa gaa gaa cct tca aat aag act cag agg atg ctg      2132
Asp Ala Gln Met Glu Glu Glu Pro Ser Asn Lys Thr Gln Arg Met Leu
660                               665                               670

acg tgt aag gaa cgg agg aga gca gca cgg cag caa caa tcc aaa aaa      2180
Thr Cys Lys Glu Arg Arg Arg Ala Ala Arg Gln Gln Gln Ser Lys Lys
675                               680                               685                               690

gtt ggt gtg cgt tac tac gag aca cac aat gtg aaa aac agg aac agg      2228
Val Gly Val Arg Tyr Tyr Glu Thr His Asn Val Lys Asn Arg Asn Arg
695                               700                               705

aac aaa aag aag acg agc gac tca gag gga cag aaa cac aga cgc aac      2276
Asn Lys Lys Lys Thr Ser Asp Ser Glu Gly Gln Lys His Arg Arg Asn
710                               715                               720

aag ttc aga cag aag cag taa ctgcgagaaa gctgtttatt aaattataca      2327
Lys Phe Arg Gln Lys Gln
725

aaaataaaaa aaaaaaaaaa aagggcggcc gc      2359

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<210> 14  
 <211> 728  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> NS3

<400> 14

Met Val Lys Pro Lys Tyr Lys Gly Arg Ser Thr Ile Asn Arg Ser Ala  
1 5 10 15

Ala Ser Thr Asn Pro Asp Arg Val Gln Gly Ala Gly Gly Gln Asn Met  
20 25 30

Arg Asp Arg Gly Thr Ile Arg Arg Leu Asn Met Tyr Arg Gln Lys Glu  
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# Sequence Listing

35

40

45

Arg Arg Asn Ser Arg Gly Lys Val Ile Lys Pro Leu Gln Tyr Gln Ser  
50 55 60

Thr Val Ala Ser Gly Thr Val Ala Arg Val Glu Pro Asn Ile Lys Trp  
65 70 75 80

Phe Gly Asn Thr Arg Val Ile Lys Gln Ala Ser Leu Gln Lys Phe Gln  
85 90 95

Glu Glu Met Asp Lys Val Met Lys Asp Pro Tyr Lys Val Val Met Lys  
100 105 110

Gln Ser Lys Leu Pro Met Ser Leu Leu His Asp Arg Ile Gln Pro His  
115 120 125

Asn Ala Lys Val His Ile Leu Asp Thr Glu Ser Phe Glu Ser Thr Phe  
130 135 140

Gly Pro Lys Ser Gln Arg Lys Arg Pro Asn Leu Phe Ala Ser Asp Met  
145 150 155 160

Gln Ser Leu Leu Glu Asn Ala Glu Met Ser Thr Glu Ser Tyr Asp Gln  
165 170 175

Gly Lys Asp Arg Asp Leu Val Met Glu Asp Thr Gly Val Arg Asn Glu  
180 185 190

Ala Gln Glu Glu Ile Tyr Lys Lys Gly Gln Ser Lys Arg Ile Trp Gly  
195 200 205

Glu Leu Tyr Lys Val Ile Asp Ser Ser Asp Val Val Val Gln Val Leu  
210 215 220

Asp Ala Arg Asp Pro Met Gly Thr Arg Ser Pro His Ile Glu Ala Tyr  
225 230 235 240

Leu Lys Lys Glu Lys Pro Trp Lys His Leu Ile Phe Val Leu Asn Lys  
245 250 255

Cys Asp Leu Val Pro Thr Trp Ala Thr Lys Arg Trp Val Ala Val Leu  
260 265 270

Ser Gln Asp Tyr Pro Thr Leu Ala Phe His Ala Ser Leu Thr Asn Pro  
275 280 285

# Sequence Listing

Phe Gly Lys Gly Ala Phe Ile Gln Leu Leu Arg Gln Phe Gly Lys Leu  
 290 295 300  
 His Thr Asp Lys Lys Gln Ile Ser Val Gly Phe Ile Gly Tyr Pro Asn  
 305 310 315 320  
 Val Gly Lys Ser Ser Val Ile Asn Thr Leu Arg Ser Lys Lys Val Cys  
 325 330 335  
 Asn Val Ala Pro Ile Ala Gly Glu Thr Lys Val Trp Gln Tyr Ile Thr  
 340 345 350  
 Leu Met Arg Arg Ile Phe Leu Ile Asp Cys Pro Gly Val Val Tyr Pro  
 355 360 365  
 Ser Glu Asp Ser Glu Thr Asp Ile Val Leu Lys Gly Val Val Gln Val  
 370 375 380  
 Glu Lys Ile Lys Ala Pro Gln Asp His Ile Gly Ala Val Leu Glu Arg  
 385 390 395 400  
 Ala Lys Pro Glu Tyr Ile Ser Lys Thr Tyr Lys Ile Glu Ser Trp Glu  
 405 410 415  
 Asn Ala Glu Asp Phe Leu Glu Lys Leu Ala Leu Arg Thr Gly Lys Leu  
 420 425 430  
 Leu Lys Gly Gly Glu Pro Asp Met Leu Thr Val Ser Lys Met Val Leu  
 435 440 445  
 Asn Asp Trp Gln Arg Gly Arg Ile Pro Phe Phe Val Lys Pro Pro Asn  
 450 455 460  
 Ala Glu Leu Pro Thr Asp Ser Gln Leu Pro Pro Ser Ser Pro Leu Glu  
 465 470 475 480  
 Val Pro Thr Glu Thr Thr Gln Asn Asn Pro Glu Glu Glu Thr Thr Glu  
 485 490 495  
 Thr Glu Val Glu Arg Ser Asp Ser Ile Thr Glu Lys Glu Pro Glu Gly  
 500 505 510  
 Asp Cys Ser Gln Asp Arg Asn Ser Glu Met Gln Gln Ile Leu Ala Arg  
 515 520 525  
 Val Arg Gln Asn Phe Gly Lys Ile Asn Val Gly Pro Gln Phe Ser Ala  
 530 535 540

# Sequence Listing

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Asp Asp Leu Val Pro Val Glu Met Ser Asp Leu Glu Asp Leu Glu Ser
545                               550                               555                               560

Ser Gly Glu Glu Glu Glu Gln Glu Gln Glu Gln Pro Gly Glu Asp Ala
565                               570                               575

Glu Glu Glu Arg Ser Pro Asp Thr Gln Glu Glu Pro Val Gly Asn Asp
580                               585                               590

Thr Lys Ala Val Leu Arg Ala Leu Asp Glu Lys Ile Ala Lys Tyr Gln
595                               600                               605

Arg Phe Leu Asn Lys Ala Lys Ala Lys Lys Phe Ser Ala Val Arg Ile
610                               615                               620

Ser Lys Asp Leu Ser Glu Lys Val Phe Ala Lys Tyr Lys Glu Glu Lys
625                               630                               635                               640

Lys Thr Ser Ala Glu Asp Ser Asp Ala Ala Pro Thr Lys Lys Ala Arg
645                               650                               655

Lys Trp Asp Ala Gln Met Glu Glu Glu Pro Ser Asn Lys Thr Gln Arg
660                               665                               670

Met Leu Thr Cys Lys Glu Arg Arg Arg Ala Ala Arg Gln Gln Gln Ser
675                               680                               685

Lys Lys Val Gly Val Arg Tyr Tyr Glu Thr His Asn Val Lys Asn Arg
690                               695                               700

Asn Arg Asn Lys Lys Lys Thr Ser Asp Ser Glu Gly Gln Lys His Arg
705                               710                               715                               720

Arg Asn Lys Phe Arg Gln Lys Gln
725

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